

## ICHTHYOLOGICAL ITEMS.

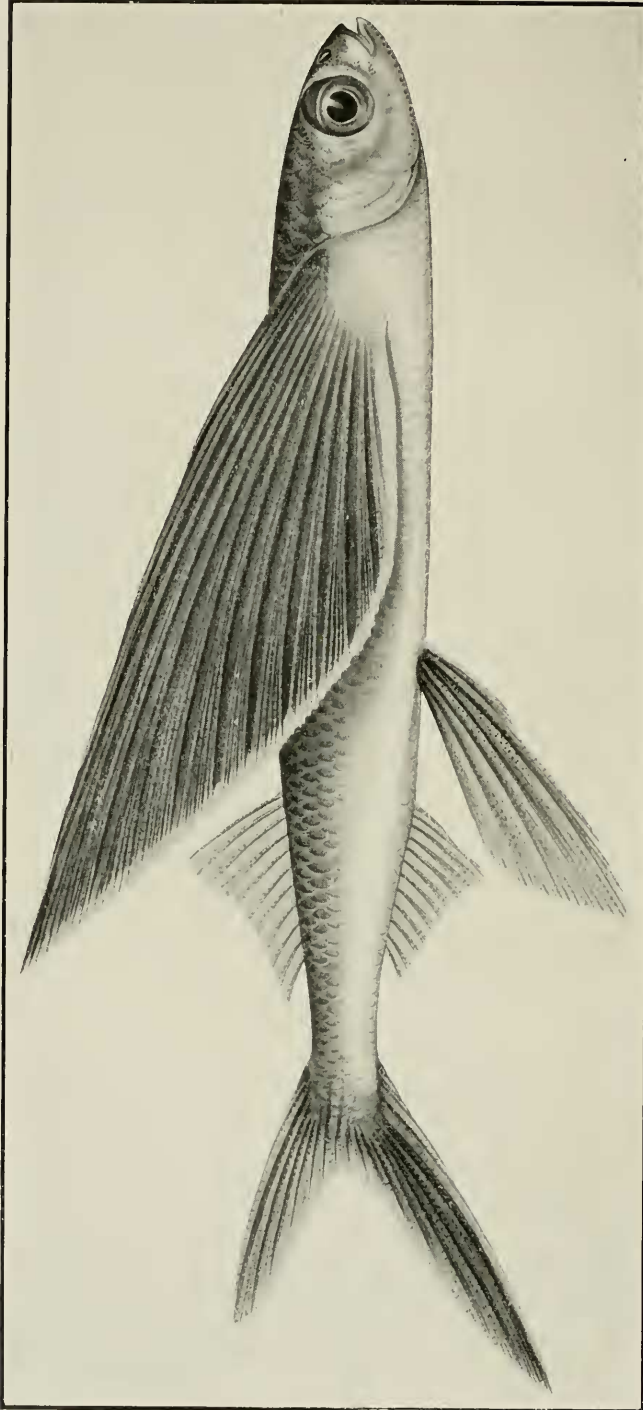
BY ALLAN R. McCULLOCH, Zoologist, Australian Museum.

(Plates VII. to IX. and Four Text-figures.)

THE following contribution consists of miscellaneous notes on fishes which have come to hand from various sources. In the endeavour to elucidate some of the problems relating to our fishes, many scraps of information concerning them are accumulated, which, though disconnected and imperfect in themselves, serve as stepping-stones towards the greater object in view. Some of these, together with descriptions of several species, are therefore submitted as items of ichthyological interest.

A feature which largely facilitates the accumulation of these notes is the advancement in recent years of our several Australian museums, and the vastly improved condition and storage of their contained collections. An appreciation of the extreme importance of typical specimens and of others which have been described or illustrated in literature has been generally developed, and invaluable material, hitherto largely neglected or lost in a maze of unsorted miscellanea, has been rediscovered and valued at its proper worth. Faded and dilapidated remains of specimens, valuable only because of their history, have been given pride of place over others more showy and of more general interest. This improvement has come none too soon, since not a few types and other specimens of equal value have either been lost or are decayed beyond redemption. It is fortunate for Australian ichthyology that the specimens on which Castlenau, Macleay, de Vis, and Johnston founded their numerous species are now being diligently sorted out of the various collections in which they are contained, and made available for examination.

Intimately associated with this advancement is a freer interchange of material between the various institutions in the different States. Until recently, ichthyological papers published in Australia have dealt almost exclusively with limited collections, and large series for comparative study and illustrating variation have been rarely obtainable. The conditions having improved, however, the collections of all the museums may now be called upon when occasion demands such a course. Ever ready to assist in this direction is Dr. R. Hamlyn-Harris, Director of the Queensland Museum, to whom I am indebted for many courtesies, and it is due to him that I have been able to investigate some of the matters referred to in the following pages. I also wish to express my thanks for the loan of specimens to Mr. Edgar R. Waite, Director of the South Australian Museum; to Mr. J. A. Kershaw, Curator of the National Museum, Melbourne; and to Mr. W. B. Alexander, Keeper of Biology, Western Australian Museum.



CYPSELURUS CRIBROSUS Kner.  $\frac{2}{3}$  Nat. Size.

A. R. McCulloch, del.

FAMILY EXOCETIDÆ.

GENUS CYPSELURUS, Swainson.

**CYPSELURUS (EXONAUTES) CRIBROSUS, Kner.**

(Plate VII.)

*Exocetus unicolor?* Cuv. & Val., *vel cribrosa*, Kner, Reise "Novara," Zool., i., Fische, 1867, p. 325. (Not *E. unicolor*, Cuv. & Val.)

*Exocetus dovii*, Ogilby, Mem. Austr. Mus., ii., 1889, p. 71. (Not *E. dovii*, Gill.)

*Exonautes rondeletii*, Waite, Rec. Austr. Mus., v., 1904, pp. 156 and 195. (Not *E. rondeletii*, Cuv. & Val.)

*Exonautes unicolor*, Jordan, Study of Fishes, 1905, i., fig. 226, and ii., p. 213. (Not *E. unicolor*, Cuv. & Val.)

*Cypsilurus unicolor*, Jordan & Seale, Bull. U. S. Fish. Bur., xxv., 1906, p. 209, fig. 12. (Not *E. unicolor*, Cuv. & Val.)

*Exonautes fulvipes*, Ogilby, Proc. Roy. Soc. Qld., xxi., 1908, p. 8.

*Exonautes cribrusos*, Ogilby, *loc. cit.*, p. 13.

Two specimens, 232-235 mm. long from the snout to the middle caudal rays, only differ from the description of *C. cribrusos* in having longer pectorals, which reach almost to the base of the caudal. According to Kner, they only extend to the anal in *C. cribrusos*, but as he compared that species with *C. unicolor* and *C. rondeletii*, both of which are long-finned species, it is probable his "Anale" is a misprint for "Caudale."

I have compared them with the type of *C. fulvipes* from Lord Howe Island, and find them identical, while the fish figured by Jordan as *C. unicolor* is also apparently the same species.

When fresh, these two specimens were deep ultramarine blue above and silver below; the pectorals are dark without lighter cross-bands, but their margins and lowermost rays are pure white; the ventrals are light-coloured, the rays being either a little dusky, or white with darker margins; caudal with lighter margins, the lower lobe a little darker than the upper. The pectoral fins reach either to the base of the caudal or only to the end of the dorsal; the ventrals also vary slightly in length. The anal may be as long as or shorter than the dorsal, and both fins may have either eleven or twelve rays each.

*Loc.*—Off Port Hacking, New South Wales, 26th July, 1915.

FAMILY SOLEIDÆ.

GENUS ASERAGGODES, Kaup.

**ASERAGGODES HAACKEANA, Steindachner.**

*Solea (Achirus) haackeana*, Steindachner, Anz. Akad. Wiss. Wien, 1883, p. 195, and Sitzb. Akad. Wiss. Wien, lxxxviii. i., 1884, p. 1104, pl. i., fig. 3.

*Solea (Aseraggodes) textilis*, Ramsay & Ogilby, Proc. Linn. Soc. N. S. Wales, (2), i., 1886, p. 6.

A comparison of the type of *Solea textilis* with Steindachner's description and figure of *S. haackeana* shows that they represent the same species. The former is described as having the lower eye slightly in advance of the upper, but this is incorrect.

This species belongs to the genus *Aseraggodes*, having no pectoral fins, the ventrals subequal and free from the anal, and the vent on the median line of the body.

## GENUS SOLEICHTHYS, Bleeker.

## SOLEICHTHYS HETERORRHINOS, Bleeker.

*Solea heterorhinos*, Bleeker, Atlas. Ichth., vi., 1866-1872, p. 17, pl. cexl., fig. 2. *Id.*, Kent, "Great Barrier Reef," 1893, p. 297, pl. xvi., fig. 5.

*Solea lineata*, Ramsay, Proc. Linn. Soc. N. S. Wales, vii., 1883, p. 406.

The typical specimen of *Solea lineata* is preserved in the Australian Museum, though it is in very bad condition and has lost some of its fins. It does not differ from an Indian example of *S. heterorhinos*, and proves Ramsay's description to be inaccurate in several details. He described the pectorals as about twice as long as the head, whereas the right is much longer than the left, and is only about half as long as the head. He counted 120 scales on the lateral line; I find about 109 on its straight portion as far as the hypural. Ramsay described the posterior dorsal and anal rays as produced; these have since been lost, so that this detail cannot now be checked.

*S. heterorhinos* has been recognised from Thursday Island, Torres Strait, by Kent. Ramsay's type was collected at Port Stephens, New South Wales.

## GENUS SYNAPTURA, Cantor.

*Brachirus*, Swainson, Nat. Hist. and Classif. Fishes, ii., 1839, p. 303 (? preoccupied by *Brachyrus*, Swainson, *loc. cit.*, p. 264).

*Synaptura*, Cantor, Cat. Malay. Fish., 1850, p. 222 (a substitute for *Brachirus*, considered to be preoccupied).

*Nomenclature.*—I am indebted to Professor David Starr Jordan for the following note on the use of the name *Synaptura* in preference to that of *Brachirus*. He writes: "I would say that *Brachirus* Swainson, 1839, p. 303, is antedated by *Brachyrus* Swainson, p. 264. Both mean *Brachychirus* apparently." This opinion, it must be noted, is in contradiction to that expressed by Jordan and Evermann<sup>1</sup> in regard to *Scaphirhynchus* and *Scaphorhynchus* when they wrote: "We regard all generic names not spelled alike as distinct." The matter being open to doubt either way, I follow Professor Jordan in adopting Cantor's *Synaptura*, which is in common use.

*Key to the species here described.*

- a. Interocular space scaly.
- b. Upper pectoral fin shorter than the eye.
- c. Body with numerous dark cross-bars .. .. . *fasciatus*.
- cc. Body without cross-bars .. .. . *breviceps*.
- bb. Upper pectoral fin longer than the eye .. .. . *salinarum*.
- aa. Interocular space naked. Body with cross-bars.
- d. Pectorals rudimentary. Scales smaller, l. lat. 112-130. Less than twenty cross-bars .. .. . *cancellatus*.
- dd. Pectorals short. Scales larger, l. lat. 90. Twenty or more cross-bars .. .. . *craticulus*.

## SYNAPTURA CANCELLATA, sp. nov.

(Plate VIII., fig. 1.)

D. 75; A. 67. L. lat. 112 from the operculum to the hypural; L. tr. 35/1/47. Greatest depth 2.8 in the length from the snout to the hypural; head 6.7 in the same. Eye about 4, posterior dorsal and anal rays 1.5, median ray of right ventral about 3 in the head; caudal fin almost as long as the head.

<sup>1</sup> Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, part i., 1896, p. 107.



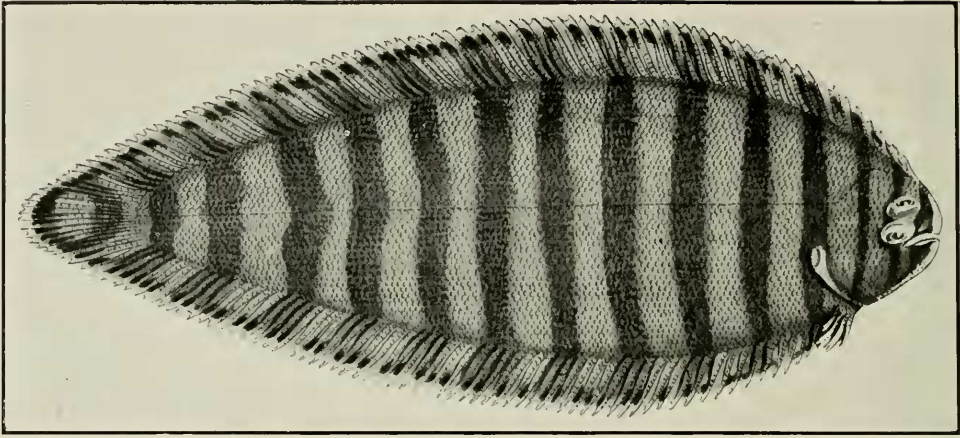


Fig. 1.—*SYNAPTURA CANCELLATA* McCulloch.

*A. R. McCulloch, del.*

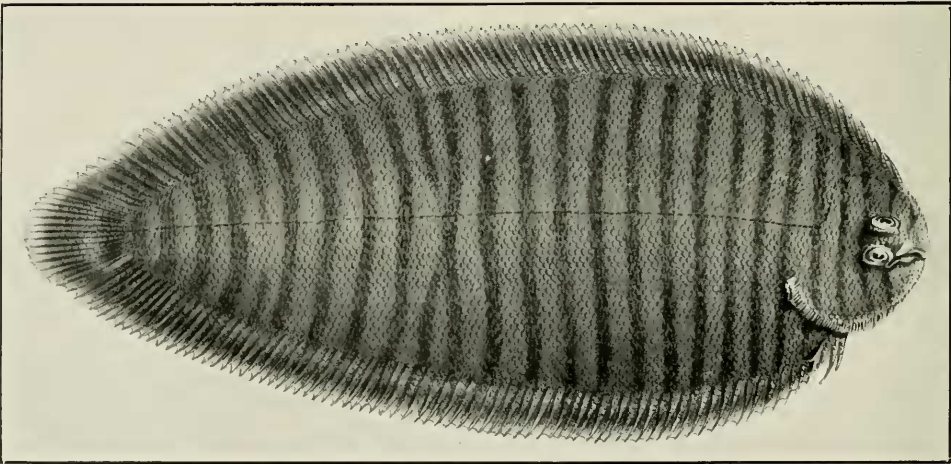


Fig. 2.—*SYNAPTURA FASCIATA* Macleay.  $\frac{2}{3}$  Nat. Size.

*A. R. McCulloch, del.*

Face page 61.

Scales ctenoid above and below, and extending onto the fin-rays. Head closely scaly above, without cirri; lower surface with many minute cirri projecting from between the scales, while the margin of the gill-opening is closely fringed with them. Eyes rather large, without any scaly interorbital space; the upper is in advance of the lower. Upper anterior nostril forming a short, simple tube, the posterior in a minute tube directly before the eye; lower anterior nostril with a low skinny border, placed above the middle of the lip, the posterior in a tube beneath the hinder portion of the upper eye. Teeth minute, apparently present on the blind side only. Mouth opening backward to below the anterior third of the eye; lower lip not fringed. Gill-membranes with skinny flaps which unite with the rudimentary pectorals to form broad tubular openings.

Dorsal fin commencing a little before the middle of the eye; the rays increase regularly in length backwards, and their tips are bifurcate and project slightly beyond the membrane. Anal of similar form to the dorsal. Caudal rounded. Ventrals opposite each other, and free from the anal; they each have four rays, of which the second is longest, but the left ventral is only half as large as the right. Pectorals rudimentary, of equal size, the longest ray about half as long as the eye; they are united with the gill-membranes as described above. Lateral line straight from the back of the head to the median caudal rays; on the upper side it curves upward and forward to the front margin of the head.

*Colour*.—Light brown above with fifteen cross-bars on the head and tail; the first is broad and largely covers the snout; second and third narrow, the former passing through the eyes and the latter across the operculum; the remainder increase in width backwards and are about as wide as the interspaces. Dorsal, anal, and caudal each with a white margin, followed by an interrupted black submarginal band; the cross-bars of the body are also continued onto the fins. Blind side colourless.

Described and figured from a specimen 193 mm. long. Five others exhibit some variation in their colour-marking; the cross-bands vary in number up to nineteen, and some may be interrupted and irregular; in some specimens the white margins of the fins are very narrow. The dorsal rays vary from 71-81, and the anal 64-70, while there are from 112-130 scales on the lateral line.

*Loc*.—Neighbourhood of Fremantle, Western Australia.

**SYNAPTURA FASCIATA**, Macleay.

MANY-BANDED SOLE.

(Plate VIII., fig. 2.)

*Synaptura fasciata*, Macleay, Proc. Linn. Soc. N. S. Wales, vii., 1882, p. 14. *Id.*, Waite, Mem. Austr. Mus., iv., 1, 1899, p. 126, pl. xxxi.

D. 75-87; A. 65-74; C. 15-16; V. 4. L. lat. 92-96; L. tr. 27/1/36. Greatest depth 2.5 in the length from the snout to the hypural; head about 6 in the same. Eye about 4, posterior dorsal and anal rays 1.5, longest ventral ray 3.2, and caudal fin 1.2 in the head.

Scales ctenoid above and below, and extending onto the fin-rays. Head closely scaly above with a few cirri on the anterior portion, and many on both its dorsal and ventral profiles, and on the margin of the gill-opening; lower surface of head closely covered with cirri which leave only the middle of the operculum bare (in spirit-specimens the cirri are much shrunken, and not easily detected). Eyes of moderate

size, separated by a scaly interorbital space ; the upper is in advance of the lower. Upper anterior nostril in a simple tube which may reach the anterior margin of the lower eye ; posterior nostril in a tube directly before the eye : lower anterior nostril above the upper lip, with a raised skinny margin ; the posterior in a tube beneath the upper eye. Teeth in a band on the left ramus of each jaw. Mouth opening backwards to below the anterior fourth of the eye ; lower lip with a few tentacles, but not fringed. Gill-membranes projecting posteriorly, and uniting with the rudimentary pectorals to form broad tubular openings.

Dorsal fin commencing slightly before the anterior margin of the eye ; the rays increase regularly in length backward, and are all simple, with their tips projecting slightly beyond the membrane. Anal of similar form to the dorsal. Caudal rounded, its rays simple. Ventrals opposite each other and subequal, the second rays longest. Pectorals rudimentary, subequal, with a few short rays which are less than half as long as the eye ; they are united with the gill-membranes as described above. Lateral line straight from the back of the head to the median caudal rays ; on the upper side, it curves upward and forward to the front margin of the head.

*Colour*.—Dark brown above, with from twenty-two to twenty-four darker cross-bars on the head, body, and tail, which are narrower than the interspaces. The margins of the dorsal, anal, and caudal fins are lighter than the remaining portions, and the cross-bars of the body are also faintly indicated on the fins.

Described from two specimens 190-200 mm. long ; the figure represents the larger specimen. I have compared these with Macleay's type, and find them to be structurally identical in all details except the formation of the upper anterior nostril ; in the type, this is bilobed instead of simply tubular, but I regard this as being probably abnormal. The specimen described and figured by Waite is preserved in the Australian Museum ; it only differs from mine in having fewer cross-bars on the body.

*Locs*.—I have examined five specimens from the northern portion of the New South Wales coast as follows :—

- Eight miles N. 10° E. of the north head of the Richmond River, 16-18 fathoms ;
- Eleven miles S. × E. from Ballina, Richmond River, 28 fathoms ;
- Eleven miles north of Cape Byron, 27 fathoms.

#### SYNAPTURA CRATICULA, sp. nov.

(Plate IX., fig. 1.)

D. 73-79 ; A. 62-67 ; V. 4 ; C. 17-18. L. lat. 90 ; L. tr. 30/1/38. Depth 2.3-2.4 in the length from the snout to the hypural ; head 6.3-6.5 in the same. Eye 3-3.3, posterior dorsal and anal rays 1.5-1.7, longest ventral ray 2-2.2, and caudal fin 1-1.1 in the head.

Scales ctenoid above and below, and extending onto the fin-rays. Head closely scaly above, without cirri ; lower surface with cirrhose scales on the anterior portion, and numerous cirri on the lower profile and along the margin of the gill-opening. Eyes rather large, contiguous, and raised above the head ; the upper is very slightly in advance of the lower, and there is no scaly interorbital space. Upper anterior nostril in a simple tube, which just reaches the anterior margin of the eye ; lower anterior nostril not dilated. Microscopic teeth are present on the blind side



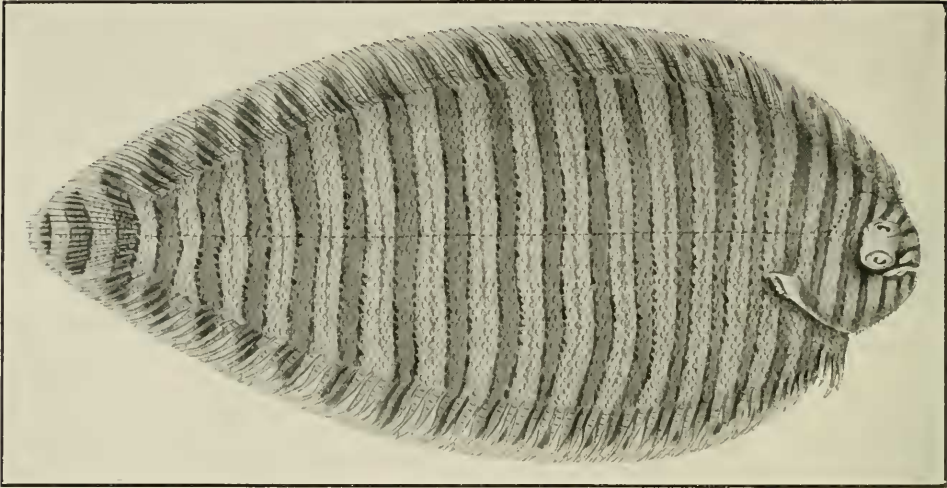


Fig. 1.—*SYNAPTURA CRATICULA* McCulloch.  $\frac{5}{8}$  Nat. Size.

A. R. McCulloch, del.

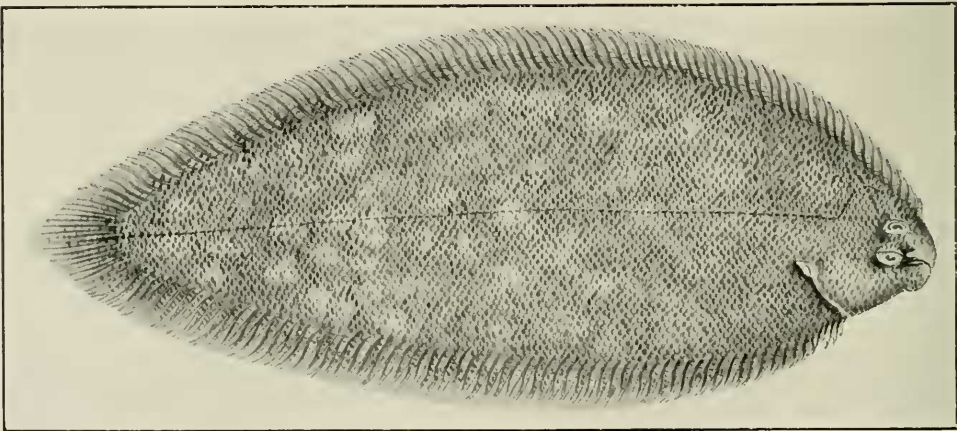


Fig. 2.—*PHYLLICHTHYS SCLEROLEPIS* Macleay.  $\frac{5}{8}$  Nat. Size.

A. R. McCulloch, del.

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only. Mouth opening backward to below the anterior third of the eye ; lower lip with a few tentacles, but not fringed. Gill-membranes dilated posteriorly, and united with the pectorals.

Dorsal fin commencing slightly before the anterior margin of the eye ; the rays increase regularly backwards, and are bifurcate, with their tips free. Anal of similar form to the dorsal. Caudal rounded. Ventrals opposite each other, and free from the anal ; the right is nearly twice as long as the left. Pectorals subequal, or the right slightly larger than the left ; the longest rays are half or less than half as long as the eye. Lateral line straight from the back of the head to the median caudal rays ; on the upper side it curves upward and forward to the front margin of the head.

*Colour*.—Light brown above, with twenty to twenty-four dark cross-bands, which are about as wide as the interspaces, and have their margins defined by series of blackish dots ; the interspaces also are crossed by narrow, indistinct bands. The bands are continued onto the fins, and the dorsal and anal are also marked with a few dark blotches near the margins.

Described from two specimens 148-159 mm. long ; the smaller is selected as the type, and is figured.

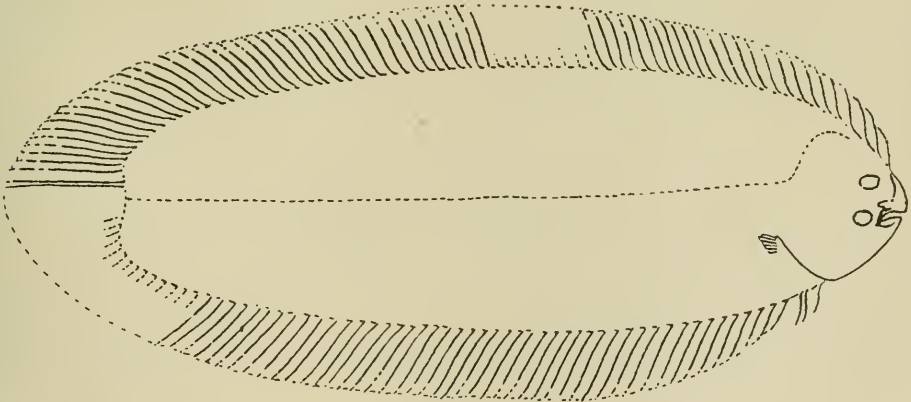
The subequal pectoral fins readily distinguish this species from the closely allied *S. zebra*.

*Loc*.—Near Bowen, Queensland.

**SYNAPTURA BREVICEPS**, Ogilby.

*Brachirus breviceps*, Ogilby, Proc. Roy. Soc. Qld., xxiii., 1910, p. 36.

D. 73 ; A. 61 ; C. ? ; P. dex. 6 ?, sin. ? ; V. ?. L. lat. 77 ; L. tr. 25/31. Greatest depth, measured on the lower surface, 3 in the length to the base of the caudal rays ; head 5·7 in the same. Eye 6·8 in the head, and equal to the interocular



Text-fig. 1.

SYNAPTURA BREVICEPS Ogilby. Nat. Size.

space. Longest ray of right pectoral fin shorter than the eye, 7·3 in the head, and shorter than that of the left pectoral, which is 5·4 in the head. Caudal ray equal to the length of the head.

Scales ctenoid above and below except on the lower surface of the head, where they are cycloid; the upper surfaces of the fin-rays are scaly, but the lower are naked in the type. All the upper portion of the head, except the lips and anterior half of the snout, is scaly; the naked portion is separated from the rest by a fold of skin which crosses the snout and is connected with the anterior dorsal ray: lower surface of head naked anteriorly, with scattered cirri. Eyes small and round, the upper partly in advance of the lower; interorbital space scaly. Upper anterior nostril with a tentacle which does not reach back to the anterior margin of the lower eye, and which has a minute, inferior, secondary lobe at its base; posterior nostril opening into a short tube placed near the lip in front of the eye. A band of microscopic teeth on the left side of each jaw. Mouth opening backward to the anterior margin of the lower eye; lips not fringed.

Fins imperfect in the type. Dorsal commencing in advance of the upper eye; its rays increase in length backward, the posterior ones being almost as long as those of the caudal. Anal similar to the dorsal. Caudal incomplete. The ventrals are much damaged, and partly wanting; they were evidently opposite each other and subequal anteriorly, and separated from the anal by a short interspace. Pectorals minute, the left a little larger than the right. Lateral line straight from the middle caudal rays to the back of the head; it is arched upward and forward on the upper surface of the head.

*Colour*.—Uniform greyish brown after long preservation.

Described from the type of the species which was lent me for the purpose by Dr. R. Hamlyn-Harris, Director of the Queensland Museum. It is in very bad condition, and its fins are so damaged that the details of their structure cannot now be determined, but enough is left to show that they are not altogether in accordance with Ogilby's description. The left pectoral is longer instead of shorter than the right. The ventrals are so imperfect that their form and extent cannot be made out, but the anterior rays of each are present and are close together and subequal; the second ray of the left fin is also present, and well developed, so that the fin cannot be described as "atrophied." Some of the dorsal and anal rays are missing, and those remaining are so shrivelled that I am unable to measure them satisfactorily; the outlines of these fins in the accompanying figure may therefore not be correct.

*Loc*.—Rockhampton, Queensland.

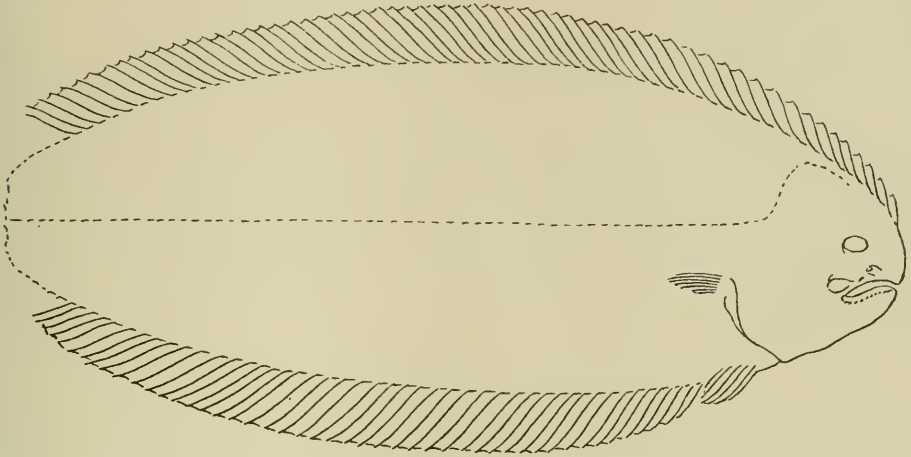
#### SYNAPTURA SALINARUM, Ogilby.

*Brachirus salinarum*, Ogilby, Proc. Roy. Soc. Qld., xxiii., 1910, p. 35.

D. 63 + ?; A. 47 + ?; C. ?; P. 7-8; V. 6. L. lat. c. 97; L. tr. 33/42. Greatest depth, measured on the lower surface, 2.8 in the length to the base of the caudal rays; head 5.1 in the same. Eye 7.2 in the head, and less than the interocular space, which is 6 in the head. Pectoral fins 2.8, median dorsal rays 2.6, and median ventral rays 2.6 in the head.

Scales ctenoid above and below, and extending onto the fin-rays on both surfaces. Upper surface of head scaly to the tip of the snout: lower surface with fringes of cirri on the anterior third which extend backward near the lower border, while smaller cirri define a series of mucous canals which are arranged in the manner

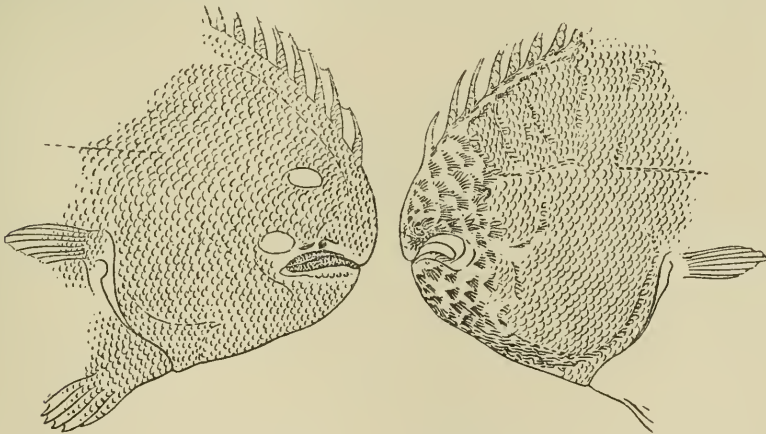
shown in the accompanying figure; the intervening spaces are scaly. Eyes small, the upper being half its length in advance of the lower; interocular space scaly, a little more than an eye-diameter wide. Upper nostrils near the lip, the anterior



Text-fig. 2.

SYNAPTURA SALINARUM Ogilby. Nat. Size.

in a short tube which does not reach backward to the posterior; lower anterior nostril hidden in a bunch of cirri above the middle of the upper lip, the posterior in a tube beneath the upper eye. Microscopic teeth on the left side of each jaw. Mouth rather large, reaching backward to below the middle of the lower eye; lower lip with some minute tubercles, not fringed.



Text-fig. 3.

SYNAPTURA SALINARUM Ogilby. Upper and under surfaces of head  $\times 3$ .

Dorsal fin commencing above the middle of the snout: its rays increase to the middle of its length, and then decrease again backward; its posterior portion is

missing in the type. Anal similar to the dorsal, its terminal portion also lacking. Caudal missing. Pectoral fins well developed, subequal; the middle rays are longest, and more than twice as long as the eye. Ventrals subequal, opposite each other, the median rays longest and overlapping the anterior anal rays; the hinder rays of each appear to have been attached to the body by membrane, which is now torn, leaving them free.

*Colour*.—Stained green in preservative, with traces of darker markings. Dorsal and anal fins with lighter margins; pectorals dark.

Described from one of the typical specimens lent me for examination by the Director of the Queensland Museum. It is 123 mm. long without the caudal fin. Ogilby's brief description was prepared from two specimens, both of which were mutilated, the tails and the ends of the dorsal and anal fins being broken off. He counted sixty-six dorsal and fifty-three anal rays, while the proportions he gave are somewhat different from those of the specimen I have described. He counted only eighty-four scales, whereas I find about ninety-seven directly below the straight portion of the lateral line.

*Loc*.—Salt pans at Kimberley, North Queensland.

#### GENUS PHYLlichTHYS, gen. nov.

Allied to *Synaptura*, but differing in having the ventral fins more or less united by membrane, and the right ventral completely joined to the first anal ray; vent placed in front of the anal fin, but slightly to the left of the median line.

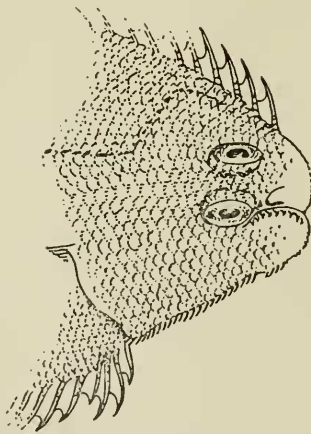
*Type*.—*Synaptura sclerolepis*, Macleay.

#### PHYLlichTHYS SCLEROLEPIS, Macleay.

(Plate IX., fig. 2.)

*Synaptura sclerolepis*, Macleay, Proc. Linn. Soc. N. S. Wales, ii., 1878, p. 363, pl. x., fig. 4.

D. 84; A. 71; V. 4. L. lat. 93; L. tr. 30/35. Greatest depth, measured on the lower surface, nearly 3 in the length from the snout to the hypural; head 6.3 in the same. Eye 4.6, posterior dorsal ray 1.7, and caudal fin 1.2 in the head.



Text-fig 4.

PHYLlichTHYS SCLEROLEPIS Macleay. Head  $\times 2$ .

Scales etenoid above and below, extending onto the fin-rays. Head closely scaly above, without cirri; anterior third of the lower surface closely covered with



large cirri, which are also present on the lower border of the head and on the margin of the gill-opening. Upper eye a little in advance of the lower; interorbital space scaly. Upper anterior nostril in a short thick tube, the posterior in a broad tube directly in front of the eye; lower anterior nostril hidden among the cirri, the posterior in a large tube beneath the upper eye. Teeth forming bands on the left side of each jaw. Mouth opening backward to below the anterior third of the eye; lower lip fringed with a row of short fleshy tentacles. Gill-membranes united posteriorly with the short pectorals, with which they form broad tubular openings.

Dorsal fin commencing well before the eye; its rays increase regularly in length backward, and are bifurcate with their extreme tips free. Anal similar in form to the dorsal. Caudal obtusely pointed. Ventrals subequal, opposite each other, the right united with the left and with the anal. Pectorals rudimentary, the left larger than the right, and composed of about eight rays, of which the longest is shorter than the eye. Lateral line straight from the back of the head to the median caudal rays; on the upper side it curves upward and forward towards the front of the head.

*Colour*.—Brownish above, indistinctly marked with lighter patches; some of the scales are darker than the others, giving the body a spotted appearance.

Described and figured from a specimen, 168 mm. long, from Port Darwin. I have compared it with the type of the species which is preserved in the Macleay Museum, and find it agrees in all details; the right ventral fin of Macleay's specimen, however, is separate from the anal, the membrane between them having apparently been torn in handling.

**PHYLlichthys punctatus**, sp. nov.

D. 69-71; A. 61-63; V. 4; C. 13-15. Lateral line 85. Greatest depth, measured on the lower surface, 3.01-3.08 in the length from the snout to the hypural; head 6.03-6.2 in the same. Eye 6.6-7.3, posterior dorsal ray 1.3-1.5, and caudal fin 1.1-1.2 in the head.

Scales ctenoid above and below, extending onto the basal halves of the fin-rays. Head closely scaly above, with a few cirri on the snout; anterior third of the lower surface closely covered with large cirri, which are also present on the lower border of the head and on the margin of the gill-opening. Eyes almost on the same level; interorbital space scaly. Upper anterior nostril in a short, thick tube, the posterior in a broad tube directly before the eye; lower anterior nostril above the upper lip, the posterior in a large tube below the upper margin of the upper eye. Teeth forming bands on the left side of each jaw. Mouth opening backward to below the anterior portion of the eye; lower lip fringed with short tentacles. Gill-membranes expanded posteriorly, and united with the rudimentary pectorals, with which they form tubular openings.

Dorsal fin commencing well in advance of the eye; its rays increase regularly in length backwards, and are bifurcate, with their tips free. Anal of similar form to the dorsal. Caudal rounded or obtusely pointed. Ventrals subequal, almost opposite each other; the right is united with the anal, and more or less completely with the left. Pectorals rudimentary, the left larger than the right, its longest rays about as long as the eye. Lateral line straight from the back of the head to the middle caudal rays; on the upper side it curves upward and forward on the head.

*Colour*.—Light brown above, with darker blotches; the edge of each scale is darker. Dorsal, caudal, and anal fins with a white margin.

Described from two specimens 205-233 mm. long.

This species is very similar to *P. sclerolepis*, differing only in having smaller eyes, and fewer dorsal and anal rays.

*Loc.*—Busselton, Geographe Bay, South-Western Australia.

## FAMILY ANTENNARIIDÆ.

### GENUS RHYCHERUS, Ogilby.

*Rhycherus*, Ogilby, Proc. Roy. Soc. Qld., xxi., 1907, p. 17 (*R. wildii*, Ogilby).

In his definition of this genus, Ogilby has described the teeth as small, and the tongue as smooth. I regard the teeth as of moderate size, while in his typical specimen of *R. wildii* the tongue has strong teeth on either side of the median line. McCoy placed *R. bifurcatus* in *Chironectes*, and in defining that genus he also described the tongue as smooth, but strong lingual teeth are present in his species.

#### RHYCHERUS FILAMENTOSUS, Castelnau.

*Chironectes filamentosus*, Castelnau, Proc. Zool. Soc. Vict., i, 1872, p. 244, and ii., 1873, p. 65.

*Antennarius filamentosus*, Macleay, Proc. Linn. Soc. N. S. Wales, v., 1881, p. 579.

*Chironectes bifurcatus*, McCoy, Prodr. Zool. Vict., Dec. 13, 1886, pl. cxxiii. *Id.*, Lucas, Proc. Roy. Soc. Vict., 2nd. ser., ii., 1890, p. 27.

*Rhycherus bifurcatus*, Ogilby, Proc. Roy. Soc. Qld., xx., 1907, p. 19.

*Rhycherus wildii*, Ogilby, *loc. cit.*, p. 18.

Four specimens, 70-207 mm. long, show that this species is a little variable in some of its characters, and they indicate that the synonymy quoted above is correct.

One specimen is the type of *R. wildii*, Ogilby, from Southern Australia, for the loan of which I am indebted to Dr. R. Hamlyn-Harris, Director of the Queensland Museum. A second small example was received from the Western Australian Museum for identification, and was collected at Cottesloe Beach, Swan River. A third is 150 mm. long, and was forwarded by Mr. J. A. Kershaw, Director of the National Museum, Melbourne; it was obtained at Brighton, near Melbourne, which is the typical locality of *R. bifurcatus*, McCoy. The fourth is the largest specimen, and comes from South Australia; it was lent me by Mr. Edgar R. Waite, Director of the South Australian Museum.

Castelnau's description of *C. filamentosus* apparently includes several errors, and the details given of the dorsal spines and the dentition are so confused that it is not clear what they are intended to convey. It seems, however, that they may be reconstructed to apply to the typical specimen of *R. wildii*, which is in agreement with the rest of the description, and I am convinced that the two names refer to the same species.

Ogilby's type differs from my other specimens in having the dermal filaments and tubercles of the body and fins more numerous and larger; the flesh is greatly shrunken upon the bones of the head, so that the cranial cavities are more pronounced, and the eyes appear to be placed upon short, broad peduncles as described by Castelnau. The terminal portion of the anterior dorsal spine is differently formed

in three of the specimens : in Ogilby's type it is a crescentic appendage formed of two divergent, fleshy lobes, behind which is a low, broad, petiolate flap ; in the small Western Australian specimen, the spine is surmounted by several fleshy tentacles of different lengths, behind which is a skinny sheath which is as long as the rest of the spine ; the terminal portion of the Brighton and large South Australian specimens consists of two long branches with two basal flaps as figured by McCoy. I have no doubt that these differences are either individual variations or are due to the different state of preservation of the specimens, and regard all three as referable to the one species.

The small Western Australian specimen is quite similar to the larger Brighton example in its colour-marking, and both only differ from McCoy's figure in having the dorsal fin and an area along its base enclosed in a large, well-defined, white patch ; in the largest specimen no such white patch is present, but the dark markings are more extensive and more pronounced than in the figure. Ogilby's specimen has become stained an almost uniform brown after long preservation in spirits.

EXPLANATION OF PLATES.

PLATE VII.

*Cypselurus cribrus*, Kner. A specimen 232 mm. long from the snout to the middle caudal rays, from off Port Hacking, N. S. Wales.

PLATE VIII.

Fig. 1. *Synaptura cancellata*, sp. nov. Type, 193 mm. long, from near Fremantle, Western Australia.

Fig. 2. *Synaptura fasciata*, Macleay. A specimen 200 mm. long, from off the Richmond River, N. S. Wales.

PLATE IX.

Fig. 1. *Synaptura craticula*, sp. nov. Type, 148 mm. long, from near Bowen, Queensland.

Fig. 2. *Phyllichthys sclerolepis*, Macleay. A specimen 168 mm. long, from Port Darwin, North Australia.

EXPLANATION OF TEXT-FIGURES 1-4.

No. 1.—*Synaptura breviceps* Ogilby. Type, 137 mm. long, from Rockhampton, Queensland. Partially restored.

No. 2.—*Synaptura salinarum* Ogilby. Type, 123 mm. long without the caudal fin, from Kimberley, Queensland.

No. 3.—*Synaptura salinarum* Ogilby. Upper and lower views of head of type.

No. 4.—*Phyllichthys sclerolepis* Macleay. Head of a specimen, 168 mm. long, from Port Darwin, North Australia.